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Wen Liu

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In the application of:

Ho

Serial No.: 10/828,761

Filing Date: April 20, 2004

For: DUAL-DISPLAY PANEL MODULE  
WITH A SHARED ASIC CHIP

Examiner: Abdulsalam, Abbas I.

Group Art Unit: 2629

**APPEAL BRIEF**

Mail Stop Appeal Brief  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Further to the Notice of Appeal filed on February 11, 2008, (a Pre-Appeal Brief Request for Review had been earlier filed and a Notice of Panel Decision from Pre-Appeal Brief Review issued on March 14, 2008, which effective reset the time to file Appeal Brief to April 14, 2008), Appellant appeals to the Board of Patent Appeals and Interferences from the final rejection of the above-identified patent application, comprising Claims 1, 4-8 and 11-21.

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**I. REAL PARTY IN INTEREST**

Toppoly Optoelectronics Corp. owns the entire right, title, and interest in the present application, by virtue of assignment from the inventors, and therefore is the real party in interest.

**II. RELATED APPEALS AND INTERFERENCES**

Appellants are aware of no other appeals or interferences pertaining to the instant invention.

**III. STATUS OF CLAIMS**

Claims 2, 3, 9 and 10 have been canceled, and claims 1, 4-8 and 11-21 stand finally rejected, as indicated by the Final Office action mailed October 9, 2007. Claims 1, 4-8 and 11-21 are being appealed. A copy of the claims being appealed is presented in the Claims Appendix attached hereto.

**IV. STATUS OF AMENDMENTS**

Proposed amendments to the specification were filed subsequent to the Final Office Action, in the Response to Final Office Action dated December 10, 2007, and the Supplemental Response to Final Office Action dated January 9, 2008. However it is unclear if the amendments have been entered, and if not entered, the reasons for not entering such.

In response to Appellant's December 10 Response, the Examiner indicated in a first Advisory Action dated December 27, 2007 that for purposes of appeal, the proposed amendment to the specification in the earlier filed Response after final will be entered. However, in a further telephonic discussion with the Examiner, he indicated that the proposed amendment to the specification raises new matter issue. Appellant thereafter filed the Supplemental Response with a revised proposed amendment to the specification. In response to Applicant's January 9 Supplemental Response, the Examiner indicated in a second Advisory Action dated February 4, 2008 that for purpose of appeal, the remarks will be entered, but did not specifically address the

proposed amendments to the specification, and did not specifically object or reject entry of the proposed amendments to the specification. It is therefore unclear if the last proposed amendment to the specification has been entered, or if not entered, the basis for not entering such.

## V. SUMMARY OF CLAIMED SUBJECT MATTER

Claims 1, 8 and 15 are the independent claims being appealed.

The subject matter defined in independent claims 1 and 8 relate to a dual-display panel module, which comprises a connector in the form of a flexible printed circuit board electrically connecting a primary display module and a secondary display module, and a driver supported in electrical connections to the primary display module and the secondary display modules via the connector. The subject matter defined in independent claim 15 does not specifically recite a flexible printed circuit board connector, but requires the connector to be independent of any switches.

Referring to one embodiment of the present invention disclosed in the specification (see Fig. 4, pages 8-10), a dual-display panel module 300 has a primary-display panel module 300M and a secondary-display panel module 300S. An ASIC (Application Specific Integrated Circuit) chip 364 is connected to the display panel modules through a COF (chip on flex) packaging method, whereby one driver ASIC chip 364 is shared between the primary-display panel module 300M and the secondary-display panel module 300S. Thus, the ASIC chip 364 is formed in relation to a flexible printed circuit board (FPCB) connector 362 that electrically connects the primary and secondary panels, therefore facilitating coupling the ASIC to the first and second display panels. Via this electrical connection, electrical traces are supported, which are electrically coupled to the outputs of the ASIC chip 364. The common driver ASIC chip 364 facilitates control of both primary and secondary display panels. The shared ASIC chip 364 reduces power consumption, module cost, required area on the FPCB and components required thereby. Fig. 5 illustrates an alternate embodiment, with similar components and structures noted above.

**VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

- (1) Whether claims 15-21 are unpatentable under 35 U.S.C. 112, first paragraph.
- (2) Whether claim 15 is unpatentable under 35 U.S.C. 102(e) as being anticipated by Toba (USPN 6907276; hereinafter "Toba").
- (3) Whether claims 1, 4, 8, 11, and 16-18 are unpatentable under 35 U.S.C. 103(a) over Toba in view of Aoki et al. (USPN 7184010; hereinafter "Aoki").
- (4) Whether claims 5 and 12 are unpatentable under 35 U.S.C. 103(a) over Toba in view of Aoki and Sekura et al. (USPN 6198383; hereinafter "Sekura").
- (5) Whether claims 6-7 and 13-14 are unpatentable under 35 U.S.C. 103(a) over Toba in view of Aoki and Jacobsen et al. (USPN 6073034; hereinafter "Jacobsen").
- (6) Whether claim 19 is unpatentable under 35 U.S.C. 103(a) over Toba in view of Sekura.
- (7) Whether claims 20-21 are unpatentable under 35 U.S.C. 103(a) Toba and Jacobsen.

**VII. ARGUMENTS****A. Rejection under 35 U.S.C., First Paragraph**

In response to the Final Action, Appellant earlier proposed to amend the specification to specify that the flexible printed circuit board (FPCB) connector is independent of any switches. This does not add any new matter to the specification. In fact, the Examiner never objected to such proposed amendment to the specification as being new matter. In the respective Advisory

Actions, the Examiner merely stated that the specification does not mention the exclusion of switches as a connector (i.e., FPCB independent of any switches), and it should have been disclosed in the specification as originally filed. Appellant respectfully disagrees.

Appellant notes that as is well understood in the art, a FPCB is a passive electrical circuit or traces formed and supported (i.e., "printed") on a non-conductive flexible substrate. The FPCB is used to mechanically support and electrically connect active components, such as the driver. In the disclosed embodiment, the driver is an ASIC formed on the FPCB connector by a chip-on-flex (COF) method. The connector, in the form of a FPCB, in and by itself inherently does not have any switches within the flexible printed circuit board, such that the flexible printed circuit board is independent of any switches, as shown in the embodiment of FIG 4.

As is the inherent nature of a FPCB, as well as further specifically illustrated in the embodiment of FIG. 4, for example, the flexible printed circuit board is independent of any switches. Appellant earlier proposed to amend the specification at page 9 to recite: "The connector can be substantially flexible, such as a FPCB (flexible printed circuit board) 362, which in and by itself inherently does not have any switches within the flexible printed circuit board, such that the flexible printed circuit board is independent of any switches, as shown in the embodiment of FIG 4." (Proposed added language emphasized.) The inherent nature of a FPCB does not include switches. And further, as specifically illustrated in FIG. 4, the illustrated FPCB does not include switches. As is known in the art, FPCB is a dumb circuit with traces supported on a substrate. Accordingly, Appellant's specification as originally filed contained an enabling disclosure of an FPCB that does not include any switches. It follows that Appellant's proposed amendment herein does nothing more than provide language that is supported by the original specification, which amendment should be entered.

The rejection under 35 U.S.C. 112, first paragraph should therefore be withdrawn.

**B. Rejection under 35 U.S.C. 102(e)**

Appellants contend that the Examiner has not established that claim 15 is anticipated by Toba and that the Examiner's rejection should be reversed.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F. 2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). See also, MPEP § 2131. Toba does not describe all of the limitations of the claims as set forth on appeal.

Claim 15 specifically requires "a connector electrically connecting the primary display module and the secondary display module". Referring to Fig. 7 in Toba, the Toba circuit does not provide electrical connection between two display modules. Instead, the circuit in Toba selectively directs driver signals alternately to the two displays 5 and 11. Switches 27 and 28 are used to selectively provide driver input to one of the display units 5 and 11 at any one time. These switches 27 and 28 are therefore for isolation between two display channels. As such, the two display units 5 and 11 cannot be electrically connected to each other in the presence of the isolation switches 27 and 28. Therefore, the structure of the Toba circuit would not anticipate claim 15.

Claim 15 further requires "the connector is independent of any switches." In the disclosed embodiment, the connector, which can be a flexible printed circuit board or FPCB, is without any switches.

Even though Appellant contends that the specification discloses FPCB without switches, for the sake of completeness, Appellant respectfully requests entry of the amendment to the specification, as proposed in Appellant's Supplement Response to the Final Office Action.

Even if the recitation "independent of any switches" is deemed to be new matter not supported by the original specification, Toba still does not anticipate claim 15 because it does not disclose electrically connecting two displays.

Applicant respectfully submits that the Examiner erred by construing the claims out of context of the specification. The recited connector (such as FPCB) independent of switches, electrically interconnects two displays, as construed in the context of the present invention. It is

not reasonable to refer to switches in Toba as the recited connector. Applicant respectfully submits that the Examiner erred by construing the switches in Toba to correspond to the recited connector.

To properly construe the terms of a claim, reference must be first made to the intrinsic evidence (i.e., the patent specification, the prosecution history, and the claims in the patent, and when appropriate, to extrinsic evidence that may assist in determining the proper construction. (See, *Markman*, 52 F.3d at 979-981; Extrinsic evidence consists of all evidence that is external to the patent and file history, including ... dictionaries....) Terms in the claims are given their ordinary meaning unless it is established that the inventor disclosed a different meaning. (See, *Mendenhall v. Cedarapids, Inc.*, 5 F.3d 1557, 1578 (Fed. Cir. 1993), *cert. denied*, 114 S. Ct. 1540 (1994).) An inventor may be his own lexicographer by giving special meaning to terms used in the patent claims. Such an inventor-defined term, however, must be described in the patent specification. (See, *Markman, supra.*) Claims must be read in view of the specification, which is "highly relevant to the claim construction analysis" because it contains a written description of the invention that must be clear and complete enough to enable those of ordinary skill in the art to make and use it. "Usually, [the specification] is dispositive; it is the single best guide to the meaning of disputed term." (See, *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).) The specification also acts as a restriction on claim scope in that a claim cannot be construed to have a broader scope than supportable by the written description. (See, *Scimed Life Systems, Inc. v. Advanced Cardiovascular Systems, Inc.*, 242 F.3d 1337, 1341 (Fed. Cir. 2001); *Gentry Gallery, Inc. v. Berkline Corp.*, 134 F.3d 1473, 1480 (Fed. Cir. 1998); "[C]laims may be no broader than the supporting disclosure, and therefore . . . a narrow disclosure will limit claim breadth.")

Further, the Federal Circuit has recently affirmed the basic principles of claim construction, including the extent to which the court should resort to and rely on a patent's specification in seeking to ascertain the proper scope of its claims. (See, *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005).) Importantly, a person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification. The Federal Circuit recognized that it and the Supreme Court have long emphasized the importance

of the specification in claim construction. Therefore, the Federal Circuit held, it is entirely appropriate for a court, when conducting claim construction, to rely heavily on the written description for guidance as to the meaning of the claims.

Following the authorities set forth by the courts, Applicant is entitled to be its own lexicographer, in adopting a consistent usage of the terms "connectors" that is supported by the specification, which should have been reasonably interpreted in the context of the specification. The specification consistently adopts "connectors" to refer to non-switch type passive electrical connections electrically connecting two displays, based on a reasonable interpretation. The switches in Toba do not electrically connect two display modules, but instead selectively complete connection to one of the displays at any one time, but never making an electrical connection between the two displays. Within the context of the disclosure of the present invention, such connectors do not include switches such as those disclosed in Toba.

C. Rejections under 35 U.S.C. 103(a)

1. Claims 1, 4, 5, 8, 11 and 12

Independent claims 1 and 8 do not recite "independent of any switches". Therefore, the issue relating to this limitation would not be applicable to claims 1 and 8.

Independent claims 1 and 8 each recites "a connector electrically connecting the primary display module and secondary display module, wherein the connector is a flexible printed circuit board". As noted above, Toba does not teach electrically connecting the primary and secondary display modules 5 and 11, regardless of the nature of the connector. Further, Toba does not teach specifically using a flexible printed circuit board, and further using such to electrically connect two display modules. The Examiner earlier conceded to such deficiency in Toba. In fact, the Examiner specifically stated "Toba does not teach the connector is substantially flexible, and the connector is a flexible printed circuit board". (See, page 7 in the Office Action dated April 13, 2007, and also page 7 in the Final Office Action dated October 9, 2007.)

Aoki does not make up for the deficiencies of Toba. Aoki likewise does not teach the use of a flexible printed circuit board to electrically connect a primary display module and a secondary display module. Aoki merely discloses that a flexible printed circuit board may be connected to a side of a liquid crystal display panel, but not electrically interconnecting two displays. Consequently, even if Aoki can somehow be combined with Toba, such combination would not obtain the present invention as defined in previously presented independent claims 1 and 8.

Accordingly, even without specific reference to "independent of switches" for the recited connector in claims 1 and 8 (i.e., FPCB connector recited in claims 1 and 8), and further given a reasonable construction of the recited connector in the context of the present invention (i.e., connector interconnecting two displays), these claims are not rendered obvious by Toba and Aoki.

Further with respect to dependent claims 5 and 12, Sekura does not make up for the deficiencies of Toba and Aoki. Sekura does not teach "a connector electrically connecting the primary display module and secondary display module, wherein the connector is a flexible printed circuit board", as required by base claims 1 and 8. Accordingly, given the deficiencies in Toba and Aoki with respect to the base claims 1 and 8, and similar deficiencies in Sekura, the combination of Toba, Aoki and Sekura would not obtain the invention defined by dependent claims 5 and 12.

There is no teaching, suggestion, motivation, or any apparent reason to combine Toba and Aoki in the first place, and no predictable result is yield by such combination. In fact, Toba teaches away from using a FPCB to interconnect two displays. Toba specifically require switches, in addition to drivers, which switches are provided between the two displays in order to be able to selectively direct driver signals to one of the display units 5 and 11. There is no indication anywhere in Toba and Aoki, how a flexible printed circuit board without any switches may be incorporated in Toba to achieve the intended purpose in Toba, or for any other purpose for that matter. There is no indication anywhere that Toba should be modified to remove the switches 27 and 28, and instead adopt a FPCB to electrically connect the display units 5 and 11. There is therefore no apparent reason to combine Toba with either Aoki, Sekura or Jacobsen, respectively, since there is no justifiable reason to the switches in Toba with a

flexible printed circuit board without switches, and further to electrically connect two displays. The claimed invention therefore involves more than the predictable use of prior art elements according to their established function.

A prima facie case of obviousness therefore has not been established by the Examiner. To find otherwise would require hindsight bias, which has been cautioned by the Supreme Court: "A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning."; KSR v. Teleflex, 127 S. Ct. 1727, 1741 (2007). The Examiner has not given articulated reason for combination or modification of art applied in the rejection, other than a conclusory statement ("Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Toba's switches with Aoki's flexible printed circuit board, because the use of flexible printed circuit board helps constitute a liquid crystal display device as taught by Aoki.") The Supreme Court re-emphasized that conclusory statements do not sustain an obvious rejection; "instead, there must be articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id.*, at 1741. And from the Memo of May 3, 2007, to the PTO Tech. Center Dirs.: "Therefore, in formulating a rejection under 35 U.S.C. 103(a) based upon a combination of prior art elements it remains necessary to identify the reasons why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed." The foregoing examination guidelines for determining obviousness have recently been specifically documented in Fed. Reg., Vol. 72., No. 195, pp. 57526 etc.

Accordingly, Claims 1, 4, 5, 8, 11 and 12 are therefore not rendered obvious by Toba in combination with Aoki, and further in combination with Sekura (for claims 5 and 12).

2. Claims 6-7 and 13-14

Jacobsen does not make up for the deficiencies of Toba and Aoki. Jacobsen does not teach "a connector electrically connecting the primary display module and secondary display module, wherein the connector is a flexible printed circuit board", as required by base claims 1 and 8. Accordingly, given the deficiencies in Toba and Aoki with respect to the base claims 1

and 8, and similar deficiencies in Jacobsen, the combination of Toba, Aoki and Jacobsen would not obtain the invention defined by dependent claims 6-7 and 13-14.

3. Claim 19

Sekura does not make up for the deficiencies of Toba with respect to base claim 15. Sekura does not teach "a connector electrically connecting the primary display module and secondary display module, wherein the connector is independent of any switches", as required by base claim 15. Accordingly, given the deficiencies in Toba with respect to the base claim 15, and similar deficiencies in Sekura, the combination of Toba and Sekura would not obtain the invention defined by dependent claim 19.

4. Claims 20-21

Jacobsen does not make up for the deficiencies of Toba with respect to base claim 15. Jacobsen does not teach "a connector electrically connecting the primary display module and secondary display module, wherein the connector is independent of any switches", as required by base claim 15. Accordingly, given the deficiencies in Toba with respect to the base claim 15, and similar deficiencies in Jacobsen, the combination of Toba and Jacobsen would not obtain the invention defined by dependent claims 20-21.

### VIII. CONCLUSION

In view of all the foregoing, Appellants respectfully submit that the Examiner's rejections fail to establish anticipation under Section 102(e). An anticipating reference must disclose each and every limitation with sufficient clarity to prove its existence in the prior art. See, Motorola, Inc. v. Interdigital Tech. Corp., 43 U.S. P. Q. 2d 1481, 1490 (Fed. Cir., 1997) (citing In re Spada, 911 F. 2d 705, 708, 15 U.S.P.Q.2d 1655, 1657 (Fed. Cir. 1990)). Toba failed to disclose the claimed limitations emphasized above. Therefore, independent claim 15 and all claims dependent therefrom are not anticipated by Toba, and all of its independent claims contain patentable novelty. Further, Appellant respectfully submits that the Examiner's rejections failed to establish a prima facie case of obviousness under 35 USC §103(a) based on any combination of the cited art. In view of the foregoing, Appellants respectfully request that the Board reverse the claim rejections and pass the presently rejected claims on to allowance.

Respectfully submitted,



Dated: April 14, 2008

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# **CLAIMS APPENDIX**

1. A dual-display panel module, comprising:  
a primary display module;  
a secondary display module;  
a connector electrically connecting the primary display module and secondary display module, wherein the connector is a flexible printed circuit board; and  
a driver operatively coupled to the primary display module and secondary display module, wherein the driver is supported in electrical connections to the primary display module and the secondary display modules via the connector.
4. The dual display panel module of claim 1, wherein the driver is formed on the connector.
5. The dual-display panel module of claim 1, wherein the driver is an ASIC.
6. The dual-display panel module of claim 1, wherein at least one of the primary and secondary display panels comprises an amorphous silicon TFT-LCD panel.
7. The dual-display panel module of claim 1, wherein at least one of the primary and secondary display panels comprises a low temperature polysilicon TFT-LCD panel.

8. An electronic device, comprising:

a dual display module comprising:

a primary display module;

a secondary display module;

a connector electrically connecting the primary display module and secondary display module, wherein the connector is a flexible printed circuit board; and

a driver operatively coupled to the primary display module and secondary display module, wherein the driver is supported in electrical connections to the primary display module and the secondary display modules via the connector; and

a controller operatively coupled to the dual display module and communicating display data to the dual display module.

11. The electronic device of claim 8, wherein the driver is formed on the connector.

12. The electronic device of claim 8, wherein the driver is an ASIC.

13. The electronic device of claim 8, wherein at least one of the primary and secondary display panels comprises an amorphous silicon TFT-LCD panel.

14. The electronic device of claim 8, wherein at least one of the primary and secondary display panels comprises a low temperature polysilicon TFT-LCD panel.

15. A dual-display panel module, comprising:

a primary display module;

a secondary display module;

a connector electrically connecting the primary display module and secondary display module, wherein the connector is independent of any switches; and

a driver operatively coupled to the primary display module and secondary display module, wherein the driver is supported in electrical connections to the primary display module and the secondary display modules via the connector.

16. The dual-display panel module of claim 15, wherein the connector is substantially flexible.

17. The dual-display panel module of claim 16, wherein the connector is a flexible printed circuit board.

18. The dual-display panel module of claim 15, wherein the driver is formed on the connector.

19. The dual-display panel module of claim 15, wherein the driver is an ASIC.

20. The dual-display panel module of claim 15, wherein at least one of the primary and secondary display panels comprises an amorphous silicon TFT-LCD panel.

21. The dual-display panel module of claim 15, wherein at least one of the primary and secondary display panels comprises a low temperature polysilicon TFT-LCD panel.

**EVIDENCE APPENDIX**

None

**RELATED PROCEEDINGS APPENDIX**

None